Guerin- Chemistry

Lab Report Instructions/Guidelines

The following is an outline of what to include in a proper lab report. If you follow these guidelines you will be on the right track to writing a perfect lab report.

Language:

- Use complete sentences and proper English.
- Avoid using the first person (I, we, my, etc.). **WRITE IN PASSIVE VOICE**
- Be precise. Say what you mean and pay attention to detail. Use the proper scientific terminology. *Do not be afraid to sound like a geek. I am a geek and will be impressed.*
- Be organized in your writing. The key to performing any experiment as you know is organization. Carrying over that organization into the lab report is also a must. If your report is well organized it will be extremely easy for the reader to understand what you did and found.
- Also use a consistent format. The font should be no larger than 12 pt and the lines should be no more than double spaced. Do not add extra spaces between paragraphs or use a larger font to pad the length of your paper. The length of your report is not important. It is what is in the report that is important.
- Use proper symbols, subscripts, and degree symbols where applicable. Do not pencil these in.

The Report

The following lists the sections that you must have in your report.

Title

- A brief but specific phrase describing the experiment.
- Use correct English; do not omit any articles ('the' or 'a').
- It may be helpful for this to be done after you have written the report. This way what was done in the lab is fresh in your mind and it will be easier to write the title.

Introduction (What is the major concept, and how the lab showed it)

- This section is a statement to INTRODUCE and EXPLAIN the major chemical idea that the lab is reinforcing. For example, if the lab being written up is about empirical formulas, you should discuss what an empirical formula is. This may be explicit or implied but you must avoid using the phrase "the purpose of this experiment…"
- The intro should answer these two questions:
    1. What was the major topic of the lab?
    2. What, specifically, was done in the experiment to show this? (This answer should not be a re-written version of the methods section. It should just be a quick overview of what was done.)
    3. Why is the information gleaned in this lab useful?
- Again you may want to write this section after you have written the rest of the lab.
- Any chemical reactions performed in the lab should be included.

Methods (What was done what was seen)

- This section should be a concise account of what **YOU DID** in this experiment, not what you were supposed to do.
- Do not go into excessive detail, but instead include the **important steps** and **observations** so that someone like you could repeat the experiment if given a copy of your lab.
- Use the passive, not the imperative, voice. This section **should not** be a list of commands.
- Also a drawing or picture of the experimental setup may also be extremely useful. Make sure that whenever you add a picture or figure that you label it properly. Also be sure to include a figure legend and reference your figure in the text.
- This section should be written first. This way it serves as a refresher as to what was done in the experiment, and will make the other parts of the lab easier to write.
- This section will be easily written if you use your lab notebook (or procedural sheets). Your notebook is a direct account of what happened in the lab and what data you took. It should act as guide in your writing.

Results (What you got for data, and what you got for calculations)

- All raw and calculated data accumulated in your experiment need to be reported. These include: temp readings, yield of products, % yield, any other calculated results, etc.
- Tables and graphs should be used to display data. These should be neatly arranged and concise. Include a title and a legend for each figure or table. Also be sure that you reference each table and graph in the text. Make sure to center all tables and data within the tables.
- In the results section, simply show data tables and write a couple of sentences to refer them to the reader. Use paragraph form and complete sentences, but do not show or restate any data in the paragraph portion of the report.
- It is very important that no analysis of the results be done in this section. That is the point of the next section.

Discussion (How you got what you got what you got, and how why it's off)

- All reported data reported in the results section must be accompanied by a discussion about what the data means and how it is calculated. This includes the tables and graphs. Do not include the numbers that you calculated for every data point. Instead only include the final result numbers.
- Each separate result and/or how it was calculated should be discussed explicitly. Avoid grouping the discussion of many results together. This results in one large, vague paragraph.
- Any chemical reactions performed in the lab should be included.
- It is also important to note that when you discuss mistakes or erroneous data it is not enough to simply list them. You must also speculate what you think the cause of problem was, and how would lead to the erroneous outcome. **Be specific**. For example, if your percent yield of product is lower than expect give reasons why it is lower. Not why it is higher.
- DO NOT STATE HUMAN ERROR AS A FACTOR IN YOUR EXPERIMENT
- The questions in the lab handouts can supply you with good ideas of what should be discussed if you are having difficulty writing your report. However, do not just answer the questions, they may not actually pertain to what you are discussing.
- The last paragraph in the discussion should be a conclusion to the lab. This addresses whether the objectives of the experiment were met or not. This is not as restricted as other parts of the lab report. It should not be a continuation of discussing the results though. Sentences like "This experiment went well…" or "This was a fun and informative lab…" do not constitute a proper conclusion to a report.

Calculations

- Be sure all calculations are in your lab notebook, or on a separate attached piece of paper. These must be done out completely showing all work and units!
- In your lab report , just refer the reader to the appropriate page in your lab notebook. This should be done in the results section.

References

- Any information that you include in your introduction, discussion that is not taken from the lab should be cited. Refer to the WRHS writing and research guide for guidelines in referencing.

NOTE: Do not procrastinate writing the report. Get it done at least one day before it is due. This will give you a chance to let your mind clear and go back to proof read the paper. A lot of bad phrasings, grammatical errors, and poor writing can be corrected this way.